DOCUMENT RESUME

ED 121 036 EC 082 714

AUTHOR Dobbert, Daniel J.
TITLE Variables Affecting the Use of Instructional Media by Minnesota Special Educators.
PUB DATE 76
NOTE 58p.; Paper presented at the Annual Meeting of the American Educational Research Association (San Francisco, California, April 1976, Session 11.10)

EDRS PRICE MF-$0.83 HC-$3.50 Plus Postage
DESCRIPTORS Elementary Secondary Education; *Evaluation Criteria; Exceptional Child Research; *Handicapped Children; *Instructional Media; *Questionnaires; *Special Education Teachers; Statistical Analysis

ABSTRACT

Variables affecting use and non-use for 58 media of instruction by 506 Minnesota special educators during the 1973-74 school year were examined. Analysis utilized the chi-square statistic to determine non-chance relationships. Descriptive statistics were reported for all variables and population descriptions. Findings suggested that teaching assignment, availability, and level have the greatest frequency of significant relationships. Teacher preparation sequence was noted to have an insignificant relationship to use and nonuse. (Author/SB)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED121036

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

SCOPE OF INTEREST NOTICE
The ERIC Facility has assigned this document for processing to: EC IR
In our judgement, this document is also of interest to the clearinghouses noted to the right. Indexing should reflect their special points of view.

VARIABLES AFFECTING THE USE OF INSTRUCTIONAL MEDIA BY MINNESOTA SPECIAL EDUCATORS

by
Daniel J. Dobbert, Assistant Professor
Graduate Program in Pharmacy Administration
College of Pharmacy*
University of Minnesota
Minneapolis, Minnesota 55455

Presented to:
Special Education Special Insterest Group
AERA 1976 Convention
San Francisco, California

*At time of study - Research Associate in Psychoeducational Studies (Special Education Programs) and Educational Administrator, University of Minnesota.

Note: The University of Minnesota Computer Center partially supported this study through a grant of computer time.

Edited by La Vell Rowley

EC082714

TABLE OF CONTENTS

	Page
Purpose	1
Limitations of the Study	1
Methodology	2
Sample Selection	2
Hypotheses of the Study	3
Questionnaire Design	5
Pilot Test of Questionnaire	6
Selection of Media	6
Procedures Used to Maximize Response Rate	7
Definition of Terms Used	8
Data Analysis	10
Variables Created	10
Descriptive Statistics	10
Significant Difference Tests	11
Results	12
Survey Returns	12
Population Description	12
Frequency of Media Used	13
Relationship of Student Level, Teaching Assignment, and Student Handicap to Utilization	14
Adequacy of Supply	19
Availability of Media Utilized	20
Non-Use Reason and Availability	21
Summary of the Findings from Tests of Significant Relationships	22
Conclusions and Recommendations	22
Conclusions	24
Recommendations for Further Research	26
References	28
Appendix	33

APPENDIX

		Page
Table 1	Media Used in Study by Level on Cone of Experience	33
Table 2	Sample Population by Student Levels	35
Table 3	Sample Composition by Teaching Assignment	35
Table 4	Sample Composition by Retread and Non-Retread	36
Table 5	Sample Composition by Type of Non-Retread	36
Table 6	Sample Composition by Type of Retread	37
Table 7	Sample Composition by Training Sequence	37
Table 8	Usage and Availability	38
Table 9	Summary Chi-Square Test Level by Amount of Use	41
Table 10	Summary Chi-Square Test Level by Reason for Non-Use	42
Table 11	Summary Chi-Square Test Teaching Assignment by Amount of Use	43
Table 12	Summary Chi-Square Test Teaching Assignment by Reason for Non-Use	44
Table 13	Summary Chi-Square Test Retread/Non-Retread by Amount of Use	46
Table 14	Summary Chi-Square Test Type of Retread by Amount of Use	47
Table 15	Summary Chi-Square Test Type of Non-Retread by Amount of Use	48
Table 16	Summary Chi-Square Test Retread/Non-Retread by Reason for Non-Use	48
Table 17	Summary Chi-Square Test Type of Retread by Reason for Non-Use	49
Table 18	Summary Chi-Square Test Type of Non-Retread by Reason for Non-Use	49
Table 19	Summary Chi-Square Test Amount of Use by Availability for Media Used	50
Table 20	Summary Chi-Square Test Reason for Non-Use by Availability for Media Not Used	52

PURPOSE

This study describes media utilization by special education teachers. In addition, relationships which effect media utilization in other than a chance manner were to be identified. The factors examined were training sequence, availability and adequacy of supply of media used, appropriateness or familiarity and availability of media not used, student handicap classification, teaching assignment, and student grade level.

Limitations of the Study

The study was limited to the State of Minnesota. Persons reported by local school district administrators (building principals) as being employed as Special Education Teacher during 1973-74 school year were the population base. Those employed were identified from the Annual Report of Professional Staff Assignments 1973-74 (Minnesota State Department of Education, 1973c) report filed each year in October by every school in Minnesota. Tutors employed as special hourly non-contract employees were excluded from this data base. The print-out listing provided by the Special Education Section, Department of Education, State of Minnesota, was reviewed for duplicate entries and for persons with no direct teaching responsibility. Those names were removed. The remaining list of teachers with direct teaching responsibility for special education students served as the study population of special educators teaching during the 1973-74 school year.

The study involved a random sample of 16% (15.58) of the population or 506 teachers. The questionnaire used for data collection was divided into

six sections: (1) verification of employment during the 1973-74 school year; (2) level of students taught; (3) teaching assignment (i.e., self-contained, resource, etc.); (4) special education classification of the students taught (i.e., learning disabled, visually impaired, etc.); (5) preparation sequence; and (6) media usage, appropriateness and availability.

METHODOLOGY

Sample Selection

The sample population included 3,247 teachers employed by Minnesota public schools who were identified as teaching special education students during the 1973-74 school year. The population data base was obtained from the Annual Report of Professional Staff Assignments (Minnesota Department of Education, 1973a; Bezanson, C., Note 4; Delgehauser, R., Note 5) completed yearly by every school principal in Minnesota and filed with the State Department of Education by October of each school year. Individuals were listed in the population data base once for each different assignment and/or district for which they were employed. Three independent reviews of the data base were made to remove duplicate entries. Teachers without specific students assigned them such as principals, superintendents, special education directors and supervisors, librarians and media people were also deleted from the population data base during those three reviews. Of the 3,360 initial entries 2,247 teachers remained in the population for this study.

Sample size was established with the aid of an error of measurement audit table for a 98% incidence rate at the .01 confidence level. For the population size (3,300) which most closely equaled that for this study (3,247) the entry for .01 confidence was a minimum of 492 cases (Arkin, p. 44, 1961). A selection of 506 was made to account for spoiled or missing

returns and unavailable addresses. This was 16% (15.58) of the study population, falling within the recommended range of 10% to 20% for a study sample size (Ary, Jocobs, and Razavich, 1972, p. 167).

The teachers were numbered consecutively from 1 to 3,247. A list of 506 random numbers generated by the University computer comprised a non-replacement random drawing of numbers within the specified range. The 506 numbers selected were placed in consecutive order (1 to 3,247) by another University Computer Center program.

Teachers numbered identical to those on the listing of random numbers were numbered 1 to 506. Their names, addresses and numbers (1 to 506) were typed on xerox self-adhesive address labels. Addresses for teachers were obtained from the 1973-74 Minnesota Educational Directory (Minnesota State Department of Education, 1973b). The school building address was used if it was identified on the listing of teachers; otherwise the administrative office address was used.

Hypotheses of the Study

Hypotheses were formulated for each of five research questions. The first research question asked what media were utilized by special educators. The response to this question was a frequence table showing the frequency of of selection by special educators for each media. Research question two concerns the relationship between the amount of use or the reason for non-use and the level of student, teaching assignment, and student handicap. This question was tested with the following null hypotheses:

H_1: There is no significant relationship between the amount of use for each media and student level.

H_2: There is no significant relationship between the reason for non-use for each media and student level.

H_3: There is no significant relationship between the amount of use for each media and teaching assignment.

H_4: There is no significant relationship between the reason for non-use for each media and teaching assignment.

H_5: There is no significant relationship between the amount of use for each media and student handicap.

H_6: There is no significant relationship between the reason for non-use for each media and student handicap.

Question three asks if teacher preparation sequence is related to media utilization. That question was tested using these null hypotheses:

H_7: There is no significant relationship between the amount of use for each media and teacher preparation sequence.

H_8: There is no significant relationship between the reason for non-use for each media and teacher preparation sequence.

The fourth question is concerned with teacher perception of adequacy of supply for media utilized. That question was tested using this null hypotheses:

H_9: There is no significant relationship between the amount of use for each media and teacher perception of the adequacy of supply.

A frequence table indicating teacher perception of availability for each resource utilized provided additional response.

The fifth question is concerned with teacher perception of the appropriateness and availability of media not utilized. The following null hypotheses was formulated and tested to examine that question:

H_{10}: There is no significant relationship between the reason for non-use and the availability for each media.

A frequence table showing the reason for non-use, and the teacher perception of availability for each media provided further information.

The chi-square statistic was used to test significance. The discussion and presentation of results are limited to findings significant to at least the .05 level.

Questionnaire Design

The questionnaire survey instrument developed for use in this study was divided into six sections: (1) verification of employment during the 1973-74 school year; (2) student grade level; (3) teaching assignment; (4) student handicap classification; (5) teacher training sequence and (6) media use, availability, appropriateness and familiarity. A glossary of terms used in the questionnaire was included as the last sheet of the instrument.

Section one asked the person to verify that he/she was employed as a special education teacher during the 1973-74 school year. Section two listed levels taken from the Terminology and Codes for Reporting Professional Staff Assignments (Minnesota State Department of Education, 1974c, p. 18) to determine the grade level of students taught by the teacher. Section three was designed to determine the assignment of each teacher. Those levels were determined in consultation with the Minnesota Department of Education, Special Education Section (Anderson, R., Note 6; Schmerler, F., Note 7). Section four identified handicap classification(s) for the students taught. These classifications taken from Terminology and Codes for Reporting Professional Staff Assignment (Minnesota State Department of Education, 1974c, p. 17), were verified and final terminology was determined with consultation from the Minnesota Department of Education, Special Education Section (Anderson, R., Not 6; Schmerler, F., Note 7). The retread or non-tread type for each teacher was identified through section five. Again the Minnesota Department of Education, Special Education Section was consulted in determining the final content wording (Schmerler, F., Note 7). Section six identified media utilization patterns for each of 58 media representing the 11 components of Dale's cone of experience (Dale, E., 1969, p. 43-308).

The questionnaire in its pre-pilot test version was reviewed by the researcher's colleagues (Anderson, J. & Bredie, D., Note 8; Ary, D., Note 9; Dorle, J., Note 10; Schmerler, F., Note 7).

Respondents were asked to check their response(s) to the appropriate item(s) for sections one through five on the questionnaire. In section six respondents were asked to circle the two responses for each media. For those media utilized respondents were to indicate frequency of use and availability of the resource. For those items not utilized respondents were to indicate the appropriateness or familiarity, and availability of the media. Responses were for either use or non-use but not both.

Pilot Test of Questionnaire

The survey instrument was pilot-tested during the summer of 1974 at the University of Minnesota with Minnesota public school teachers taking classes in mental retardation, special learning and behavior problems, and at School District 287, St. Paul, Minnesota, with teachers of hearing impaired. The pilot study sample was chosen for convenience, availability, and similarities with the teacher population data base for the study.

The pilot study tested the instructions and organization of the instrument rather than the content. Participants were asked to indicate where instructions were unclear and what problems or concerns they had with the instrument. These comments were written on the pilot test version of the instrument. The comments served as the basis for revision. Three revisions were necessary before pilot test participants made no indications of problem areas in lack of clarity.

Selection of Media

The cone of experience mentioned earlier consists of eleven levels. The 58 media included on the questionnaire represented all levels. To insure

proper interpretation and inclusion of media at all levels all those media given as examples by Dale were used (Dale, E., 1969). Table 1 (see Appendix) presents a complete listing of media used in the study by level on the cone of experience.

Procedures Used to Maximize Response Rate

Timing for the study was planned so that teachers would be surveyed beginning the second week of their school year. The rationale for this was to request the population sample's time and effort before they received other questionnaires. A discussion with University of Minnesota students who have prior Minnesota teaching experience and faculty of the University of Minnesota indicated that by October of any year, many survey studies are underway. That information influenced the decision concerning the study timeline.

A pre-questionnaire mailing was sent to all members of the population sample. It consisted of two letters, one from the researcher and one from the Director, Special Education Section, Minnesota State Department of Education. The researcher's letter explained the purpose of the study and importance of obtaining each individual's participation, requested the person's school year address if that on the envelope was incorrect, and asked to be informed if the person would participate in the study. The other letter offered the support of the Special Education Section for the study and encouraged participation by members of the population sample. Another letter describing the study and requesting participation was sent with the first questionnaire.

Six follow-ups were used for non-respondents. Five were serious in nature, referring to the importance of the study and requesting participation of non-respondents. One follow-up was more humorous - Halloween card asking for the return of the questionnaire as a treat from the non-respondent. The content of follow-ups generally followed that used by other researchers

(Bredie & Anderson, 1972, p. 219-239).

Several questionnaires were received with incomplete responses. The first two pages either contained unanswered or improperly completed responses (i.e., more than one choice where only one is permitted). Pages three through six had blank pages or items and possibly more or less than the permitted number of responses per item. Those instruments received with either or both types of error were followed up in an attempt to obtain properly completed questionnaires.

Definition of Terms Used

Many terms used here have been "coined" for this particular study. Some have been defined with a particular purpose in mind. Others have been developed by equipment manufacturers. In order to establish a common meaning for terms utilized in this study and to minimize confusion, the following list of defeinitions is provided.

Non-Retread - Type I - a teacher who:

1. received regular education certification before special education certification, and
2. did not teach regular education before or while receiving training leading to special education certification, and
3. taught special education before or while receiving training leading to special education certification.

Non-Retread - Type II - a teacher who:

1. was not certified in regular education before being certified in special education, and
2. did not teach regular education before or while receiving training leading to special education certification, and
3. taught special education before or while receiving training leading to special education certification.

Non-Retread - Type III - a teacher who:

1. was certified in regular education before being certified in special education, and
2. did not teach in regular education before or while receiving training leading to special education certification, and

3. did not teach special education before or while receiving training leading to special education certification.

Non-Retread - Type IV - a teacher who:

1. was not certified in regular education before being certified in special education, and
2. did not teach in regular education before or while receiving training leading to special education certification, and
3. did not teach special education before or while receiving training leading to special education certification.

Retread - a teacher who taught in regular education before or while receiving training leading to special education certification.

Retread - Type I - a teacher who:

1. received regular education certification before special education certification, and
2. taught regular education before or while receiving training leading to special education certification, and
3. taught special education before or while receiving training leading to special education certification.

Retread - Type II - a teacher who:

1. was not certified in regular education before being certified in special education, and
2. taught regular education before or while receiving training leading to special education certification, and
3. taught special education before or while receiving training leading to special education certification.

Retread - Type III - a teacher who:

1. received regular education certification before special education certification, and
2. taught regular education before or while receiving training leading to special education certification, and
3. did not teach special education before or while receiving training leading to special education certification.

Retread - Type IV - a teacher who:

1. was not certified in regular education before being certified in special education, and
2. taught regular education before or while receiving training leading to special education certification, and
3. did not teach special education before or while receiving training leading to special education certification.

DATA ANALYSIS

During the pilot test phase respondents were unable to respond to questions requiring quantitative estimates of frequency of use or media availability. Therefore nominal data were collected and the chi-square statistic was used. Significance tests results are reported at both the .01 and .05 levels.

Variables Created

Three groups of variables were created. For the first, the type of preparation sequence, eight classes of "tread" were developed. Four were categorized as retread and the other four as non-retreads. These categories were developed by assigning respondents to a category based on their response to questions in suction five of the questionnaire. A second group of variables was for student handicap classification and grade level. Three grade levels emerged by assigning respondents to one of three categories -- elementary, secondary, or both -- based upon their response to section two of the questionnaire. No logical method was identified for collapsing the 102 combinations (categories) of student handicap reported by respondents, so the handicap classification was not analyzed further than to describe its composition. The third group of variables, developed to described the amount of use for each media, was created by coding responses "seldom" and "sometimes" as infrequent and "often" as frequent. These variables were created to maximize the expectancy for each cell in the Chi-Square analysis and to utilize all available cases.

Descriptive Statistics

Eleven weeks after the initial mailing of the instrument to special education teachers employed in Minnesota public schools during the 1973-74

school year the data analysis was begun. It was assumed that all returns had been received. Stanton (1939) reported that nearly 90% of the eventually returned questionnaires are received in 20 days. Six months after that date only one additional questionnaire had been received. Descriptive statistics were reported for the population and for utilized of media resources. The Crosstabs and Codebook Programs from the University of Minnesota version of the Statistical Package for the Social Sciences (SPSS) were used for data analysis. Frequency distributions, with percentages, and cumulative percentages were generated.

Significant Difference Tests

Analysis of significant difference was also computed using the Crosstabs program from the Statistical Package for the Social Sciences (SPSS). This was done for two reasons: (1) to determine for those media reported as used if the relationship between frequency of use and availability of resource; and frequency of use, and student level, or teaching assignment, or student handicap classification, or preparation sequence for teaching are related other than by chance; (2) to determine for those media reported as not used if the relationship between the reason for non-use and availability of resource; and the reason for non-use, and student level, or teaching assignment, or student handicap classification, or preparation sequence for teaching are related other than by chance (Spence, 1968, p. 96). The Chi-Square statistic was computed separately for each media. Both the .01 and .05 level of significance were used to accept or reject the hypothesis of relationship.

RESULTS

Survey Returns

As a result of the initial mailing and follow-up procedures, 90.3% (457) were returned within the specified time. Of the 457 returned instruments, 445 or 97.4% were in usable form and were used in the data analysis. The usable response rate is 87.9% of the questionnaires mailed.

The unusable questionnaires (12) distributed themselves equally in four categories characterized by respondents who:

- Did not complete the form,
- Never taught special education,
- Did not teach special education during 1973-74 school year, or
- Responded to both sides for each resource pages 3-6 of questionnaire.

The Criteria for a usable instrument were that the first two pages be properly completed and the resources responded to on one side only.

Population Description

Respondents were divided into 39 categoreis based on levels of students they taught. The frequency was highest for the primary and intermediate group with 19.3% or 86. Next was junior high school and senior high school with a frequency of 12.4% or 55. Categories were collapsed into three levels to achieve an expected frequency of five or more for use of the chi-square statistic (see Table 2 - Appendix). The frequency in the elementary level was nearly twice that of secondary and three times that in the "both" category.

On the basis of teaching assignment respondents were placed in five categories (see Table 3 - Appendix). Resource teachers comprised almost half (48.1%) of the respondents followed by self-contained classroom and itinerant teachers. Those with lead or supervisor responsibility comprised 1.8% and 7% of the respondents respectively.

Categorizing respondents on the basis of the handicap classification of their students resulted in 102 categories. Two of these categories, educable mentally retarded and learning diabilities, were the only ones which comprised more than 9% of the population each. Educable mentally retarded contained 21.6% and learning disabilities 22.2% of the respondents. The remaining 100 categories contained less than 9% each with the majority containing only .2% each.

Grouping respondents by preparation sequence resulted in a nearly equal division between non-retread 51.0% and retread 49.0% (see Table 4 - Appendix). The non-retreads were divided into four types (see Table 5 - Appendix) with type I and type IV non-retreads comprising 86.4% of the respondents. The retreads were also divided into four types (see Table 6 - Appendix). The greatest incidence occurred in type I and type III retread with a frequency of 79.4% and 16.5% respectively, accounting for, when combined 95.9% of the retreads. A frequency table for the sample by training sequence shows that retread type I and non-retread type IV each account for over 30% of the population. Combining retread type I and non-retread type IV results in identification of 70.4% (313) of the population (see Table 7 - Appendix).

Frequency of Media Used

The usage of media ranged from 94.2% for dittoed material to 17.3% for both cable and closed circuit television. Mock-up was "seldom used" by 45.5% of its users and dittoed material by 3.6% of its users for the highest and lowest frequency of "seldom used" by users of a media. Outdoor education was "sometimes used" by 57.3% of its users and chalkboard was "sometimes used" by 17.2% of its users for the highest and lowest frequence of "sometimes used" by users of a media. Dittoed material was "often used" by 76.1% of its users and filmstrips without sound were "often used" by 0.0% for the highest and

lowest frequency of "often used" by users of a media. A frequency table for all media is included as Table 8 (see Appendix).

Relationship of Student Level, Teaching Assignment, and Student Handicap to Utilization

A test of independence of proportions was applied to the cell frequencies to test the hypotheses of no differences in the proportions of subjects non-use reason, or amount of use in each classification showing a relationship to amount of use, non-use reason, or availability. Where some expected cell frequencies were too small to permit the use of the Chi-square (Sregel, 1962, p. 110), adequate frequencies were obtained by combining cells as described earlier.

H_1: There is no significant relationship between the amount of use for each media and student level.

Significant relationships: level to amount of use. Hypothesis I was rejected for 19 (32.8%) of the 58 media when using the full spread of usage. The hypothesis was rejected for 11 (19.0%) of the 58 media when using the collapsed variable for usage. Gardening projects (.05 level) was the only media with significance using the collapsed variable did not meet that assumption.

More of those media with significance were at the .01 level for both the full and the collapsed variables. The full variable has 12 (63.2%) media at the .01 and seven (36.9%) media at the .05 level. The collapsed variable has seven (63.7%) at the .01 and four (36.4%) at the .05 level. In total 30 (25.9% of the media were significant if the full and collapsed variables are combined for a total of 116 media. There are 19 (63.4%) media at .01 and 11 media (36.7%) at .05 level of significance (see Table 9 - Appendix).

Inspection of the contingency tables indicates that the elementary teachers use media the most. Amount of use tapers off at secondary and is least for level both.

H_2: There is no significant relationship between the reason for non-use for each media and student level.

Significant relationships: level to reason for non-use. Hypothesis 2 was rejected for 21 (36.2%) of the 58 media. In only eight of those cases was the assumption of an expectency of five achieved. There were 13 (61.9%) media at the .01 level and eight (38.1%) at the .05 level of significance (see Table 10 - Appendix).

Examination of the contingency tables indicates that "not appropriate" is the major reason for non-use. The reason for non-use indicated at the elementary level is primarily "not appropriate," while at the secondary level respondents indicated the media appropriate even though they did not use it. At the combined or "both" level, "not appropriate" was the choice most often given. One can only spculate as to the availability of those media appropriate but not used.

H_3: There is no significant relationship between the amount of use for each media and teaching assignment.

Significant relationships: teaching assignment to amount of use. Hypothesis 3 was rejected for 16 (27.6%) of the 58 media. All cases with significance achieved the expectancy fo five assumption. Only the collapsed variable for amount of use was used in this test as all prerequisite assumptions for use were obtained. There were 12 (75.0%) media with significance a .01 level and four (25.0%) with a .05 level (see Table 11 - Appendix). Inspection of the contingency tables shows that a majority of the respondents indicated infrequent use of these media. It also, revealed that at least three fourths of the respondents were either in self-contained classrooms or resource teaching assignments.

H_4: There is no significant relationship between the reason for non-use for each media and teaching assignment.

Significant relationships: teaching assignment to reason for non-use. Hypothesis 4 was rejected for 33 (56.9%) of the 58 media. All cases with significance achieved the expectancy of five assumption. Over 70 (72.8%) or 24 media were significant at the .01 level. There were nine (27.3%) media significant at the .05 level (see Table 12 - Appendix).

A review of the contingency tables yields interesting information. "Not appropriate" is the most common non-use statement given. Also, those classified as resource teachers had the highest frequency of non-use.

H_5: There is no significant relationship between the amount of use for each media and student handicap.

Significant relationships: amount of use to student handicap. The respondents distributed themselves into 102 classifications on student handicap. No logical method for collapsing these categories into fewer categories utilizing all respondents was identified. This hypothesis could not be tested using the Chi-Square because the expectancy of 5 assumption was not achieved. Hypothesis 5 was not tested.

The people in data base used for the population sample had been asked their students handicap classifications previous to this study. Members of that population listed one or two classifications each. Had the sample used for this study responded in a similar manner, hypothesis 5 could have been tested. A description of sample selection and questionnaire pilot test procedures is given earlier in this paper.

H_6: There is no significant relationship between the reason for non-use for each media and student handicap.

Significant relationships: reason for non-use to student handicap. The relationship of student handicap to reason for non-use was not tested since the respondents distributed themselves into 102 categories. Hypothesis 6

was not tested for the same reasons as Hypothesis 5.

H_7: There is no significant relationship between the amount of use for each media and teacher preparation sequence.

Significant relationships: amount of use to teacher preparation sequence. The test for this hypothesis was divided into three parts. Amount of use versus Retread/Non-Retread was tested in a 2 X 2 and 2 X 3 contingency table. Amount of use was also tested in a 4 X 2 contingency table with the four types of Retread and again with the four types of Non-Retread. These tests used both the full and collapsed variables for frequency of use in the Retread/Non-Retread situation, but only the collapsed variable for frequency of use in the four types of Retread or Non-Retread situations.

Hypothesis 7 was rejected nine (15.6%) times out of 58 using the full variable for amount of use versus retread/non-retread. Using the collapsed variable and retread/non-retread the hypothesis was rejected for eight (13.8%) out of the 58 media. One media, mimeographed material, was significant at the .01 level for the amount of use with the full variable, but not significant at the .05 level for the collapsed variable. There were eight (88.9%) and six (75.0%) media significant at the .01 level for those reported significant using the full and collapsed variable respectively for amount of use. Combining the two amount of use variables results in 17 (14.7%) of 116 media being significant -- 14 (82.4%) at the .01 level and three (17.7%) at the .05 level. See Table 13 - Appendix for a presentation of all significant relationships.

Review of the contingency tables for the collapsed use variable indicates the media are used "infrequently" by most respondents whether retread or non-retread. On the other hand review of the contingency with the collapsed variables for frequency, three (5.2%) in 58 media were found to be significant. Two (66.7%) were significant at the .05 level and the remaining one (33.3%) at

the .01 level. Table 14 - Appendix presents the results of this test.

Again inspection of the contingency tables for amount of use indicates infrequent use for the collapsed amount of use variable. This relationship does not change with different types of retread or non-retread.

Lastly, the relationship was tested using the four types of non-retread versus the collapsed variable for frequency of use. The result was four (6.9%) media in 58 with significant relationships. One (25.0%) was at the .01 level and three (75.0%) were at the .05 level. This test is presented in summary as Table 15 - Appendix.

H_8: There is no significant relationship between the reason for non-use for each media and teacher preparation sequence.

Significant relationships: reason for non-use to teacher preparation sequence. Tests for this hypothesis were divided into three parts as in Hypothesis 7. The reason for non-use is tested with retread/non-retread and the four types of retread and non-retread. However, the reason for non-use could not be collapsed to improve the expected frequency as was done with amount of use.

Hypothesis 8 was rejected five (8.7%) out of 58 times for reason for non-use related to retread/non-retread. Two (40.0%) of these media were significant at the .01 level and three (60.0%) at the .05 level (see Table 16 - Appendix).

When the four types of retread are tested for relationship with reason for non-use the hypothesis is rejected for two (3.5%) media in 58, with one (50.0%) each at the .01 and .05 level of significance (see Table 17 - Appendix). The test performed using the four types of non-retread produces two (3.5%) media in 58 with a significant relationship. Both are significant at the .01 level (see Table 18 - Appendix).

Review of the contingency tables for tread (retread/non-retread) indicates "not appropriate" is the most common non-use reason given; "appropriate" is next, followed by "not familiar with". The same pattern emerges for contingency tables for both retread (types 1-4) and non-retread (types 1-4).

Adequacy of Supply

Information on adequacy of supply for those media utilized by special educators was collected in two categories for each media - need more and adequate. The response "need more" ranged from 60.5% (69) of those using laboratory experiments to 7.0% (29) of those using chalkboard. The percent of respondents reporting availability as adequate ranged from a high of 93.0% (383) for chalkboard users to a low of 45.5% (76) for specimen users. The complete presentation of reported availability for media used is given in Table 8 - Appendix.

H_9: There is no significant relationship between the amount of use for each media and teacher perception of the adequace of supply.

Significant relationships: amount of use to availability. There are 32 (56.9%) instances where Hypothesis 9 is rejected using the full variable for amount of use. Using the collapsed variable for frequency of use, 27 (46.6%) media in 58 have significant relationships this giving grounds for rejecting Hypothesis 9 a like number of times. There were 27 (84.4%) media with significant relationships at the .01 level using the full variable for amount of use and 24 (89.9%) with the collapsed variable. The remaining significant relationships for the full and collapsed frequency of use variables are at the .05 level (see Table 19 - Appendix).

As expected, a review of these contingency tables shows progressively more use combined with adequate availability for both the full and collapsed amount of use variables.

Combination of both the full and collapsed amount of use variables for a total of 116 possible occurrences results in 59 (50.9%) significant relationships. Of those, 51 (86.5%) and eight (13.6%) are at the .01 and .05 levels of significance respectively. There are four media significant in the full variable analysis situation and not the collapsed. Two of the full variable test media which are significant do not meet the expectancy of five assumption. All the collapsed variable media with significance meet that expectation.

Availability of Media Utilized

The availability (adequacy of supply) of the media as perceived by the educator utilizing each media (resource) was described by one of two categories -- need more or adequate. Only one response for availability was accepted for each media.

Laboratory experiment has the greatest frequency 60.5% (69) of users indicating "need more". The media with an adequate availability indicated by the least number of respondents is chalkboard with 7.0% (29). Chalkboard has the greatest number of respondents indicating adequate availability 93.0% (383). Lecture is next with 87.9% (181). Laboratory experiment has the least frequent report of adequate availability with 39.5% (45). Next frequent with a report of adequate availability is specimen with 45.5% (76). Availability, as reported by respondents, is presented as Table 8 - Appendix.

H_{10}: There is no significant relationship between the reason for non-use for each media and availability.

Significant relationships: reason for non-use to availability.

Rejection of hypothesis 10 occurred 31 (52.2%) times of the 58 possible. There were 27 (84.4%) media with significant relationships at the .01 level. Three (11.2%) were significant at the .05 level. The expectancy of five assumption

was not met for 10 (32.8%) of the media with significant relationships. (see Table 20 - Appendix)

A review of the contingency tables indicates most respondents chose "not available" as their availability response for the media not used. Therefore, the non-use reason is most frequently tied to "not available." The reason for non-use frequency progresses from "appropriate" to "not familiar with" for the high to low for the distribution of respondents.

Non-Use Reason and Availability

Responde ts were given three possible reasons for non-use referred to as appropriateness on the questionnaire, for selection. The choices were: appropriate, not appropriate, and not familiar with. Availability responses, "available" and "not available" were provided in the "did not use" section of the questionnaire. Respondents were to select not less than one reason for non-use (appropriateness) and one statement of the availability for each media not used (see Table 20 - Appendix).

The frequency of non-use was highest for laboratory experiments with 290 or 65.28% of the respondents reporting non-use. Dittoed material had the lowest frequency of non-use at 13 (2.9%).

The selection of "appropriate" for media not used ranged from 68.0% (11) for chalkboard to 6.6% (13) for lecture. "Not appropriate" was indicated from 89.8% (176) of the time for lecture to 13.1% (37) of the time for phono-viewer. The choice "not familiar with" has a range of 29.9% (80) for mock-up to 0.0% (0) for dittoed material, maps, textbooks, and workbook.

Those media not used but available range from 84.6% (11) for dittoed material to 15.5% (41) for audio flash card. For media not available and not used the range was 84.5% (223) for audio flash card and 84.4% (276) for cable television to 27.9% (12) for copied material and 15.5% (2) for dittoed material.

Summary of the Findings from Tests of Significant Relationships

All 10 hypotheses had one or more media with a significant relationship. The frequency of significance of the .01 level ranged from one (50.0%) to 27 (84.4%) of the media. At the .05 level the frequency ranges from one (50.0%) to nine (27.3%) of the media. A total of 177 (25.4%) different media with significant relationships are reported of the 696 (58 media X 12 tests) possible. 73.4% (130) of these were at the .01 level. 26.6% (47) were at the .05 level.

The 58 media have a mean number of significant relationships of 3.1 (25.8%). There are 177 different media with significant relationships or 25.4% of the 696 (58 media X 12 test) possible. One to six tests produced a relationship with significance for each resource. Dittoed materials, mimeographed materials, and participant in Dramatizations had one significant relationship as their only test with significance. Exhibits, outdoor education and sociodrama had six significant relationships each out of 12 (50.0%) possible. Four of those relationships were common for each of those media. Those four tests which produced common significant (.01 or .05 level) relationships for the three media with six relationships with significance are:

- Amount of Use by Availability
- Reason for Non-Use by Availability
- Teaching Assignment by Amount of Use
- Teaching Assignment by Reason for Non-Use

CONCLUSIONS AND RECOMMENDATIONS

This study explored relationships among the following variables for each of 58 instructional resources (media): student's level, teaching assignment, student's handicap classification, teaching preparation sequence, availability of the resource, and both amount of frequency of use and the reason for non-use.

Five hundred six questionnaires were sent to a randomly selected sample of special educators employed in the Public Schools of Minnesota during the 1973-74 school year. A usable return of 445 instruments (8719%) was achieved. Extensive follow-up efforts were utilized to obtain that number of returns.

Amount of use was obtained in one of three categories for each resource reported as used -- seldom, sometimes, often. The availability of each resource reported as used was categorized as either "need more" or "adequate." For those resources reported as "not used" availability was indicated either as "available" or "not available". A reason for non-use was classified in one of three categories -- appropriate, not appropriate and not familiar with -- for each media reported as not used. Responses for either "use" or "did not use" were requested for each resource. Multiple responses were unacceptable as they appeared contradictory and violated instructions contained in the instrument.

The frequency of use for each resource was tabulated and the availability of each resource was compiled. Information was obtained describing frequencies for the reason for non-use (appropriateness) and availability of each media reported as "did not use" by the respondent.

Data concerning relationships between variables for each media is intended to assist in decision making. The same is true for the frequency distributions. Administrators, teacher trainers, and others concerned with special education programs could use the data provided by this study to provide direction for their programs. For example, if it was desired to increase the use of a specific media one might examine the perception of availability. If teachers perceived low availability then efforts should be made to determine what factors lead to this perception. It may be that the resource is available but users are unaware of its location or of the procedures involved in gaining access. Dependent upon the reason behind the perception appropriate measures

should be taken to improve the perception. Taking this action would not necessarily result in improved utilization as there may be complex relationships which negate the action. If the optimization or increased utilization of instructional resources (media) was their goal, the variables related to amount of use or the reason for non-use by each resource might be of use to better achieve that end.

Conclusions

The following conclusions concern themselves with the nature of the relationship between utilization, the reason for non-use, and availability, level, teaching assignment, handicap classification, and preparation sequence. They focus on possible application of the findings. Interpretation of findings should be qualified by the restriction that relationships were not reported in terms of direction or strength but only as other than chance occurrences. In addition, the expectancy of five assumption was not achieved for all chi-square tests of significant relationship.

The findings suggest that teaching assignment has the highest frequency of significant relationships to the reason for non-use. Availability and level appear to be the next (2nd and 3rd) most frequently related factors. Type of retread and non-retread have substantially equal rankings as having the fewest significant relationships to the reason for non-use. The relationship of retread/non-retread to reason for non-use was the second most insignificant identified. An individual or program concerned with the reason for media non-use would do best to examine teaching assignment, availability, and level to determine needed changes.

Within the availability category the most frequently occurring significant relationship was between availability and use. That was followed by the relationships of level and teaching assignment to amount of use. Least

frequently resulting in a significant relationship were the type of retread, non-retread, and retread/non-retread relationships with amount of use. The availability, level, and teaching assignment would be the best variables to examine for those desiring to improve the amount of use of instructional resources.

The three most important or frequently identified factors with a significant relationship to the non-use reason and frequency of use for instructional resources are the same as for availability. This supports the conclusion that those concerned with instructional resource or media utilization should closely examine teaching assignment, resource availability, and student level when making decisions related to programmatic utilization of instructional resources or media. Little attention need be given to the teacher preparation sequence as the frequency of relationships with this variable was least frequent of those examined.

The findings of this study were suggested only in part by previous research. Availability was assumed to be most frequently related to amount of use in earlier work, and this study offers further support for that assumption. The next most frequent relationships in this study were student level and teaching assignment, ranking second and third respectively. Past investigation suggests that level may have been significant, but teaching assignment was not mentioned. Previous examination resulted in frequency tables for individual media by level of students. There was no mention of tests such as chi-square for significant relationships. Teaching assignment as it relates to amount of use for individual media was not reported in the literature reviewed.

The reason for non-use in terms of appropriateness was not previously reported in relation to availability, level, assignment or teacher preparation

sequence. Examination of prior investigations of utilization appeared to infer some relationships, but those relationships were neither clearly stated nor identified.

The sample population's distribution on the basis of handicap classification was not as expected. Respondents in the population sample did not distribute themselves as they had in the computer print-out data base the researcher used. This prevented examination of that variable's relationship to amount of use or the reason for non-use.

The results of this research have more implications for further research than they have practical application. Other studies of related content are no exception. Suggestions for decision making on the basis of the findings were presented with qualifications given earlier.

Recommendations for Further Research

On the basis of the findings of this study, the following recommendations are offered:

1. The results of this survey should be analyzed in a factorial design. Multiple variables may tend to influence the amount of use and the non-use reason stated in terms of appropriateness. Additional variables such as those suggested in the third recommendation should be included.

2. The study should be repeated with modifications in the instrument in such areas as amount of use and student handicap classification. Analysis of variables by handicap classification in this study was prevented by the large, uncollapsable number of categories into which the population sample distributed itself. Collection of ordinal rather than nominal information on amount of use would enable one to use correlations and other related statistical analyses not suitable for nominal data.

3. The data from this research should be analyzed with information on teacher salary, experience, school district location and size, and socio-

economic composition of the student population and/or employing district. These factors may also have significant relationships as variables in an analysis. Information on those factors is available from census track data tapes and teacher certification files. A factor design should be used as mentioned in the first recommendation.

4. Further investigation is recommended to identify those variables related to utilization (amount of use and non-use reason) of instructional media (resources), especially for those media which did not show significant identifiable relationships in this study. Determination of variables that affect usage would assist decision making by those concerned with instructional media (resource) utilization in programs for special education students.

5. A study to determine the reason(s) for districtution of the population sample into 102 categories of student handicap classifications, as occurred in this study, is recommended. Reliability of the classification information provided in the data base used for this study is questioned and it is recommended that the scheme be examined to insure accurate information gathering for that data base. That print-out has been the basis for previous decision making which, under these circumstances, may be questionable.

REFERENCES

Anderson, J. F., & Brede, D. R. Graduate Assistants at the University of Minnesota. Minneapolis, Minnesota: University of Minnesota, Measurement Services Center, 1972.

Aquino, C. C. Teachers' attitudes toward audiovisual instruction as they are influenced by selected factors within teaching environments. Audiovisual Communications Review, 1970, 18, 187-195.

Arkin, H. Tables for Estimating Sample Size (Department of Health, Education and Welfare, Audit Agency). Washington, D.C.: U.S. Government Printing Office, October, 1971.

Ary, D., Jacobs, L. C., & Razavieh, A. Introduction to Research in Education. New York: Holt, Rinehart & Winston, Inc., 1972.

Bredie, D. R., & Anderson, J. F. Questionnaires Design and Use. Metuchen, New Jersey: Scarecrow Press, Inc., 1974.

Champion, D., & Sear, A. Questionnaire response rate: A methodological analysis. Social Forces, March 1969, 47 (3), 335-339.

Connor, F. P., Wald, J. R., & Cohen, M. J. Professional Preparation for Educators of Crippled Children: Report of a Special Study Institute. New York: Teachers College, Columbia University, 1970.

Dale, E. Audio-Visual Methods in Teaching (Rev. ed.). New York: Holt, Rinehart & Winston, 1969.

Eboch, S. C. Implimentation on Research Strategies and Tactics for Demonstration of Newer Media (Final Report, Project No. 5-0264, Contract No. OE-5-16-016). Washington, D.C.: U.S. Department of Health, Education and Welfare, Office of Education, Bureau of Research, September, 1966.

Freeman, R. R. Special education teacher's perception in regard to use and availability of media, Los Angeles Unified School District (Doctoral dissertation, Brigham Young University, 1973). Dissertation Abstracts International, 1973, 34, 639A. (University Microfilms No. 73-18231).

Gallagher, J. J. Phenomenal growth and new problems characterize special education. Phi Delta Kappan, April 1974, 516-520.

Godfrey, E. P. Audiovisual programs in the public schools. Washington, D.C.: Bureau of Social Science Research, Inc., May 6, 1963. (ERIC Document Reproduction Service No. ED 003 758).

Godfrey, E. P. Audiovisual programs in the public schools, Washington, D.C.: Bureau of Social Science Research, Inc., June, 1964. (ERIC Document Reproduction Service No. ED 003 759).

Godfrey, E. P. Audio-Visual media in the public schools, 1961-64. Washington, D.C.: Bureau of Social Science Research, Inc., December, 1965. (ERIC Document Reproduction Service No. ED 003 761).

Good, C. V. (Ed.). Dictionary of Education (3rd ed.). New York: McGraw-Hill, 1973.

Gruber, S. E. Regional differences in the ranking of SEST Project critical competencies for special education supervisors (Doctoral dissertation, University of Denver, 1974). Dissertation Abstracts International, 1975, 35, 5167A-5168A. (University Microfilms No. 75-2202).

Hansen, M. H., Hurwitz, W. N., & Madow, W. G. Sample Survey Methods and Theory (Vol. 1). New York: John Wiley & Sons, Inc., 1953.

Heyer, A. L. A study of possible deterrants to the use of motion pictures within a school system where films and facilities for use were provided. Unpublished doctoral dissertation, Indiana University, 1952.

Hite, H. A. A study of teacher education methods for audio-visual competency in Washington, 1937-1947. Unpublished doctoral dissertation, State College of Washington, Pullman, 1951.

Kelly, G. B. A study of teachers' attitudes toward audiovisual materials. Educational Screen and Audiovisual Guide, March 1960, 39, 119-121.

King, R. L. A study of selected factors related to variability in the use of certain types of instructional media among teachers (Doctoral dissertation, University of Missouri, 1967). Dissertation Abstracts, 1968, 28, 3528A-3529A. (University Microfilms No. 68-3622).

Kish, L. Survey Sampling. New York: John Wiley & Sons, 1965.

Larsen, L. D., Louis, D., & Wade, R. G. Media options: their availability and use by students and teachers in the Provo and Jordan school districts, Utah. Unpublished master's thesis, Brigham Young University, 1971.

Martin, D. J., & McConnell, J. P. Mail questionnaire response induction: the effect of four variables on the response of a random sample to a difficult questionnaire. Social Science Quarterly, September 1970, 51 (2), 409-414.

McAdam, R. Northern California teachers and media. Educational Screen and Audiovisual Guide, March 1968, 48, 3-21.

Mendenhal, W., Lyman, D., & Scheaffer, R. L. Elementary Survey Sampling, Belmont, California: Wadsworth Publishing Company, 1967.

Minnesota Department of Education. Annual Report of Professional Staff Assignments, 1973-74. Saint Paul, Minnesota: Author, 1973a.

Minnesota Department of Education. Minnesota Educational Directory 1973-74. Saint Paul, Minnesota: Author, 1973b.

Minnesota Department of Education. Terminology and Codes for Reporting Professional Staff Assignments (Rev. 1974). Saint Paul, Minnesota: Author, 1974c.

Minnesota Department of Education, Special Education Section. Summary of Special Education Reimbursement 1968-69. Saint Paul, Minnesota: Author, 1969.

Minnesota Department of Education, Special Education Section. Summary of Special Education Reimbursement 1969-70. Saint Paul, Minnesota: Author, 1970.

Minnesota Department of Education, Special Education Section. Summary of Special Education Reimbursement 1970-71. Saint Paul, Minnesota: Author, 1971.

Minnesota Department of Education, Special Education Section. Summary of Special Education Reimbursement 1971-72. Saint Paul, Minnesota: Author, 1972.

Minnesota Department of Education, Special Education Section. Summary of Special Education Reimbursement 1972-73. Saint Paul, Minnesota: Author, 1973.

Minnesota Department of Education, Special Education Section. Summary of Special Education Reimbursement 1973-74. Saint Paul, Minnesota: Author, 1974a.

Minnesota Department of Education, Special Education Section. Special Education Reimbursement Guidelines. Saint Paul, Minnesota: Author, 1974b.

Minnesota Department of Education, Statistics Section. Summary of Teachers Employed in Minnesota Public Schools 1968-69. Saint Paul, Minnesota: Author, 1969.

Minnesota Department of Education, Statistics Section. Summary of Teachers Employed in Minnesota Public Schools 1969-70. Saint Paul, Minnesota: Author, 1970.

Minnesota Department of Education, Statistics Section. Summary of Teachers Employed in Minnesota Public Schools 1970-71. Saint Paul, Minnesota: Author, 1971.

Minnesota Department of Education, Statistics Section. Summary of Teachers Employed in Minnesota Public Schools 1971-72. Saint Paul, Minnesota: Author, 1972.

Minnesota Department of Education, Statistics Section. Summary of Teachers Employed in Minnesota Public Schools 1972-73. Saint Paul, Minnesota. Author, 1973.

Minnesota Department of Education, Statistics Section. Summary of Teachers Employed in Minnesota Public Schools 1973-74. Saint Paul, Minnesota: Author, 1974.

National Education Association. Instructional resources in the classroom. NEA Research Bulletin, October, 1967, 75-77.

National Education Association. Selection of instructional materials and equipment by teachers. NEA Research Bulletin, March, 1970, 14-16.

Robin, S. S. A procedure for securing returns to mail questionnaires. Sociology and Social Research, 1965, 50, 24-35.

Rothenberg, S., & Vastbinder, S. The role of educational technology in the education of handicapped learning (National Center on Educational Media and Material for the Handicapped). Unpublished manuscript, Ohio State University, 1974.

Schein, J. D., & Kubis, J. J. A survey of visual aids in schools and classes for the deaf in the United States. Washington, D.C.: Gallaudet College, October, 1962. (ERIC Document Reproduction Service No. ED 003 130).

Sregel, S. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw-Hill, 1962.

Spence, J. T. Elementary Statistics (2nd ed.). New York: Appelton Century Crofts, 1968.

Stanton, F. Note on the validity of mail questionnaire returns. Journal of Applied Psychology, 1939, 23, 94-104.

Streeter, C. E. A study of relationships among selected factors affecting media use by classroom teachers within selected school systems (Doctoral dissertation, Michigan State University, 1967). Dissertation Abstracts, 1967, 28, 1723A. (University Microfilms No. 67-14, 551).

United States Office of Education, Bureau of Education for the Handicapped. Primary Objectives for the 1970's. Washington, D.C.: Author, 1970.

Watson, R. Investigations by mail. Market Research, 1937, 7, 11-17.

Webster's New Collegiate Dictionary. Springfield, Mass.: G. & C. Merriam Company, 1961.

Webster's Seventh New Collegiate Dictionary. Springfield, Mass.: G. & C. Merriam Company, 1967.

White, A. H. NCEMMH report on needs in special education (National Center on Educational Media and Material for the Handicapped). Unpublished manuscript, Ohio State University, 1974.

APPENDIX

Table 1

Media Used in Study

by Level on Cone of Experience

Verbal Symbols
- Copied Material
- Dittoed Material (photo or thermo)
- Lectures
- Mimeographed Material
- Textbooks
- Workbooks

Visual Symbols
- Charts
- Chalkboard
- Diagrams
- Feltboard
- Flannelboard
- Magneticboard
- Maps
- Transparencies (overhead)

Recordings, Radio, Still Pictures
- Audio Flash Card
- Filmstrips With Sound
- Filmstrips Without Sound
- Language Master
- Phono-Viewer
- Photographs
- Radio
- Recordings (Record, Tape)
- Slides With Sound
- Slides Without Sound

Motion Pictures
- Captioned Films (16mm and 8mm)
- Captioned Film Loops
- Silent Films
- Silent Film Loops

Table 1 continued

- Sound Films
- Sound Film Loops

Television (Educational)
- Broadcast Television
- Cable Television
- Closed Circuit Television
- Vido Tape Recordings

Exhibits
- Bulletin Boards
- Exhibits
- Posters

Field Trips
- Field Trips

Demonstrations
- Observing Demonstrations
- Participant in Demonstrations

Dramatized Experiences
- Observing Dramatizations
- Participant Dramatizations
- Puppetry
- Role Playing
- Simulations
- Sociodrama

Contrived Experiences
- Globes
- Mock-Up
- Models
- Specimens

Direct, Purposeful Experience
- Art Projects
- Class Projects
- Cooking Projects
- Gardening Projects
- Individual Projects
- Laboratory Experiments
- Outdoor Education
- Woodworking Projects

Table 2

Sample Population by Student Levels

Collasped

Student Level	f	Rf	Cf
Secondary (7-12 and Adult)	125	28.1	28.1
Elementary (Pre-school, K-6)	237	53.3	81.3
Both (Secondary & Elementary)	83	18.7	100.0
Total	445	100.0	100.0

Table 3

Sample Composition

by Teaching Assignment

Teaching Assignment	Absolute Frequency	Relative Frequency (Percent)	Cumulative Frequency (Percent)
Itinerant	72	16.2	16.2
Supervisor w/Teaching Responsibilities	8	1.8	18.0
Self-contained Classroom	120	27.0	44.0
Resource	214	48.1	93.0
Lead w/Teaching Responsibility	31	7.0	100.0
Total	445	100.0	100.0

Table 4

Sample Composition by

Retread and Non-Retread

Type	Absolute Frequency	Relative Frequency (Percent)	Cumulative Frequency (Percent)
Non-Retread	227	51.0	51.0
Retread	218	49.0	100.0
Total	445	100.0	100.0

Table 5

Sample Composition by

Type of Non-Retread

Type	Absolute Frequency	Relative Frequency (Percent)	Cumulative Frequency (Percent)
I	56	24.7	24.7
II	13	5.7	30.4
III	18	7.9	38.3
IV	140	61.7	100.0
Total	227	100.0	100.0

Table 6

Sample Composition by

Type of Retread

Type	Absolute Frequency	Relative Frequency (Percent)	Cumulative Frequency (Percent)
I	173	79.4	79.4
II	6	2.8	82.1
III	36	16.5	98.6
IV	3	1.4	100.0
Total	218	100.0	100.0

Table 7

Sample Composition

by Training Sequence

Training Sequence	Absolute Frequency	Relative Frequency (Percent)	Cumulative Frequency (Percent)
R-Type I	173	38.9	38.9
R-Type II	6	1.3	40.2
R-Type III	36	8.1	48.3
R-Type IV	3	.7	49.0
NR-Type I	56	12.6	61.6
NR-Type II	13	2.9	64.5
NR-Type III	18	4.0	68.5
NR-Type IV	140	31.5	100.0
Total	445	100.0	100.0

R-Retread

NR-Non-Retread

Table 8

Usage and Availability

Media	0 f	0 Rf	1 f	1 Rf	2 f	2 Rf	Cf[a]	Rf	3 f	3 Rf	4 f	4 Rf
Art Project	31	10.6	110	37.7	151	51.7	292	65.6	73	25.0	219	75.0
Audio Flash Card	21	13.7	62	42.5	64	43.8	146	32.8	45	30.8	101	69.2
Broadcast Television	45	34.9	65	50.4	19	14.7	129	29.0	38	29.5	91	70.5
Bulletin Boards	25	6.4	96	24.5	271	69.1	392	88.1	58	14.8	334	85.2
Cable Television	29	37.7	36	46.8	12	15.6	77	17.3	31	40.3	46	59.7
Captioned Film	35	18.7	84	44.9	68	36.4	187	42.0	58	31.0	129	69.0
Captioned Film Loop	33	23.6	65	46.4	42	30.0	140	31.5	50	40.0	84	60.0
Chalkboard	19	4.6	71	17.2	322	78.2	412	92.6	29	7.0	383	93.0
Chart	46	12.8	140	38.9	174	48.3	360	80.9	107	29.7	253	70.3
Class Projects	37	13.9	132	49.6	97	36.5	226	50.8	86	32.3	180	67.7
Closed Circuit Television	42	54.5	29	37.7	6	7.8	77	17.3	34	44.2	43	55.8
Cooking Project	33	21.4	75	48.7	46	29.9	154	34.6	63	40.9	91	59.1
Copied Material	25	6.6	110	29.2	242	64.2	377	84.7	75	19.9	302	80.1
Diagram	59	17.0	125	35.9	164	47.1	348	78.2	63	18.1	285	81.9
Dittoed Material	15	3.6	85	20.3	319	76.1	419	94.2	68	16.2	351	83.8
Exhibit	75	25.9	142	49.0	73	25.2	290	65.2	111	38.3	179	61.7
Feltboard	53	18.4	116	40.3	119	41.3	288	64.7	41	14.2	247	85.8
Field Trip	49	18.3	137	51.1	82	30.6	268	60.2	131	48.9	137	51.1
Filmstrip with Sound	39	14.6	128	47.9	100	37.5	267	60.0	92	34.5	175	65.5
Filmstrip without Sound	42	21.6	152	78.4	0	0	194	43.6	56	28.9	138	71.1
Flannelboard	54	17.8	124	40.9	125	41.3	303	68.1	50	16.5	253	83.5
Gardening Project	49	38.6	69	54.3	9	7.1	127	28.5	59	46.5	68	53.5
Globe	57	23.8	122	50.8	61	25.4	240	53.9	35	14.6	205	85.4
Individual Project	37	10.8	141	41.2	164	48.0	342	76.9	122	35.7	220	64.3

Table 8 continued

Media	0 f	0 Rf	1 f	1 Rf	2 f	2 Rf	Cf[a]	Rf	3 f	3 Rf	4 f	4 Rf
Laboratory Equipment	38	33.3	62	54.4	14	12.3	114	25.6	69	60.5	45	39.5
Language Master	25	10.2	83	33.9	137	55.9	245	55.1	69	28.2	176	71.8
Lecture	89	43.2	74	35.9	43	20.9	206	46.3	25	12.1	181	87.9
Magnetic Board	51	25.9	94	47.7	52	26.4	197	44.3	46	23.4	151	76.6
Map	51	18.2	131	46.8	98	35.0	280	62.9	57	20.4	223	79.6
Mimeographed Material	32	8.1	123	31.3	238	60.6	393	88.3	67	17.0	326	83.0
Mock-Up	51	45.5	45	40.2	16	14.3	112	25.2	47	42.0	65	58.0
Model	61	27.0	113	50.0	52	23.0	226	50.8	110	48.7	116	51.3
Observing Demonstration	59	21.6	139	50.9	75	27.5	273	61.3	96	35.2	117	64.8
Observing Dramatization	76	28.6	150	56.4	40	15.0	266	59.8	107	40.2	159	59.8
Outdoor Education	47	20.9	129	57.3	49	21.8	225	50.6	97	43.1	128	56.9
Participant in Demonstration	58	22.6	135	52.5	64	24.9	257	57.8	96	37.4	161	62.6
Participant in Dramatization	71	26.8	144	54.3	50	18.9	265	59.6	108	40.8	157	59.2
Phono-Viewer	23	22.3	50	48.5	30	29.1	103	23.1	42	40.8	61	59.2
Photograph	49	15.4	142	44.5	128	40.1	319	71.7	111	34.8	208	65.2
Poster	35	9.5	164	44.6	169	45.9	368	82.7	93	25.3	275	74.7
Puppetry	63	25.9	129	53.1	51	21.0	243	54.6	95	39.1	148	60.9
Radio	66	38.8	73	42.9	31	18.2	170	38.2	25	14.7	170	85.3
Recordings	15	4.0	121	32.4	237	63.5	373	83.8	116	31.1	257	68.9
Role Playing	69	19.5	177	54.8	83	25.7	323	72.6	102	31.6	221	68.4
Silent Film	63	55.8	43	38.1	7	6.2	113	25.4	28	24.8	85	75.2
Silent Film Loop	30	28.3	58	54.7	18	17.0	106	23.8	33	31.1	73	68.9
Simulation	57	24.4	112	47.9	65	27.8	234	52.6	97	41.5	137	58.5
Slides with Sound	45	40.2	43	38.4	24	21.4	112	25.2	48	42.9	64	57.1
Slides without Sound	57	38.0	69	46.0	24	16.0	150	33.7	61	40.7	89	59.3

Table 8 continued

Media	0 f	0 Rf	1 f	1 Rf	2 f	2 Rf	Cf[a]	Rf	3 f	3 Rf	4 f	4 Rf
Sociodrama	70	40.5	88	50.9	15	8.7	173	38.9	70	40.5	103	59.3
Sound Film	29	11.0	110	41.8	124	47.1	263	59.1	86	32.7	177	67.3
Sound Film Loop	30	33.0	44	48.4	17	18.7	91	20.4	33	36.3	58	63.7
Specimen	53	31.7	92	55.1	22	13.2	167	37.5	91	54.5	76	45.5
Textbook	42	11.6	124	34.3	196	54.1	362	81.3	65	18.0	297	82.0
Transparencies	71	27.1	124	47.3	67	25.6	262	58.9	80	30.5	182	69.5
Video Tape Recording	62	35.2	85	48.3	29	16.5	176	39.6	73	41.5	103	58.5
Woodworking	34	27.2	63	50.4	28	22.4	125	28.1	62	49.6	63	50.4
Workbook	29	7.4	125	31.9	238	60.7	392	88.1	97	24.7	295	75.3

0 = Seldom
1 = Sometimes
2 = Often
3 = Need more
4 = Adequate

[a] $_{n}$ = 445

Table 9

Summary Chi-Square

Test Level by

Amount of Use

Media	Significance[a] Variable	Collasped Variable
Art Projects	.0003**	.0001**
Chalkboard	.0000**X	.0000**
Feltboard	.0130**	---
Flannelboard	.0131**	---
Gardening Projects	---	.0343* X
Globes	.0178*	.0099**
Individual Projects	.0252*	.0413*
Magneticboard	.0035**	---
Maps	.0000**	.0000**
Outdoor Education	.0001**	.0001**
Photographs	.0489*	---
Puppetry	.0022**	.0447*
Recordings (Record, Tape)	.0130**X	.0026**
Slides w/Sound	.0190* X	---
Slides w/o Sound	.0342* X	
Textbooks	.0031**	.0037**
Video Tape Recordings	.0271* X	---
Woodworking Projects	.0048**X	.0194* X
Workbooks	.0419* X	---

[a]X indicates expectancy less than 5.

* $p < .05$

** $p < .01$

Table 10

Summary Chi-Square

Test Level by

Reason for Non-Use

Media	Significance[a]
Broadcast Television	.0452*
Cable Television	.0441*
Captioned Film Loops	.0035**
Captioned Films (16 mm and 8 mm)	.0008**
Exhibits	.0056**X
Feltboard	.0007**X
Flannelboard	.0046**X
Gardening Projects	.0160**X
Globes	.0167**X
Individual Projects	.0279*
Lectures	.0367* X
Language Master	.0010**X
Magneticboard	.0000**X
Maps	.0003**X
Mock-Ups	.0186*
Outdoor Education	.0132**X
Phono-Viewer	.0040**
Puppetry	.0001**X
Sociodrama	.0535*
Specimens	.0256*
Transparencies	.0322* X

* $p < .05$

** $p < .01$

[a]X indicates expectancy less than 5.

Table 11

Summary Chi-Square

Test Teaching Assignment

by Amount of Use[a]

Media	Significance
Art Projects	.0000**
Chalkboard	.0026**
Class Projects	.0065**
Closed Circuit Television	.0428*
Diagrams	.0277*
Field Trips	.0183*
Filmstrips w/Sound	.0485*
Filmstrips w/o Sound	.0000**
Flannelboard	.0093*
Observing Demonstrations	.0002**
Outdoor Education	.0117**
Participant in Demonstration	.0001**
Radio	.0040**
Recordings (Record, Tape)	.0095**
Sociodrama	.0001**
Workbooks	.0015**

Note. All above have expectancy less than 5.

[a]Collapsed Variable

* p .05

** p .01

Table 12

Summary Chi-Square

Test Teaching Assignment

by Reason for Non-Use

Media	Significance
Audio Flash Cards	.0066**
Broadcast Television	.0000**
Bulletin Boards	.0056**
Cable Television	.0000**
Captioned Film Loops	.0036**
Captioned Films	.0112**
Closed Circuit Television	.0000**
Exhibits	.0011**
Field Trips	.0405*
Filmstrips w/Sound	.0076**
Filmstrips w/o Sound	.0075**
Gardening Projects	.0304*
Globes	.0446*
Laboratory Experiments	.0226*
Lectures	.0472*
Maps	.0191*
Mock-Ups	.0023**
Models	.0114**
Observing Demonstrations	.0206*
Observing Dramatizations	.0056**
Outdoor Education	.0030**

Table 12, continued.

Media	Significance
Phono-Viewer	.0003**
Posters	.0000**
Radio	.0110**
Silent Film Loops	.0000**
Silent Films	.0179*
Slides w/Sound	.0000**
Slides w/o Sound	.0007**
Sociodrama	.0000**
Sound Film Loops	.0000**
Specimens	.0045**
Video Tape Recordings	.0283*
Woodworking Projects	.0001**

Note. All above have expectancy less than 5.

* $p < .05$

** $p < .01$

Table 13

Summary Chi-Square

Test Retread/Non-Retread

by Amount of Use

Media	Significance Variable	Collasped Variable
Chalkboard	.0010**	.0010**
Charts	.0001**	.0001**
Diagrams	.0000**	.0000**
Exhibits	.0000**	.0011**
Field Trips	.0015**	.0005**
Mimeographed Material	.0117**	—
Posters	.0022**	.0008**
Slides w/o Sound	.0361*	.0252*
Textbooks	.0115**	.0401*

Note. Expectancy of 5, achieved

* $p < .05$

** $p < .01$

Table 14

Summary Chi-Square

Test Type of Retread

by Amount of Use[a]

Media	Significance
Class Projects	.0343*
Cooking Projects	.0079**
Video Tape Recordings	.0181*

Note. All above have expectancy less than 5.

[a]Collasped Variable

* $p < .05$

** $p < .01$

Table 15

Summary Chi-Square

Test Type of Non-Retread

by Amount of Use[a]

Media	Significance
Cable Television	.0509*
Dittoed Material	.0506*
Filmstrips w/Sound	.0082**
Simulations	.0539*

Note: All above have expectancy less than 5.

[a]Collasped Variable

* $p < .05$

** $p < .01$

Table 16

Summary Chi-Square

Test Retread/Non-Retread

by Reason for Non-Use

Media	Significance
Art Projects	.0049**X
Filmstrips w/o Sound	.0462* X
Globes	.0042**X
Observing Dramatizations	.0487*
Participant in Demonstrations	.0428*

Note. All above have expectancy less than 5.

* $p < .05$

** $p < .01$

Table 17

Summary Chi-Square

Test Type of Retread

by Reason for Non-Use

Media	Significance
Field Trips	.0179**
Lectures	.0476*

Note. All above have expectancy less than 5.

* $p < .05$

** $p < .01$

Table 18

Summary Chi-Square

Test Type of Non-Retread

by Reason for Non-Use

Media	Significance
Individual Projects	.0048**
Sociodrama	.0023**

Note. All above have expectancy less than 5.

** $p < .01$

Table 19

Summary Chi-Square Test

Amount of Use by Availability

for Media Used

Media	Significance[a] Variables	Collasped Variables
Audio Flash Cards	.0000**	.0002**
Art Projects	.0048**	.012**
Broadcast Television	.0287*	.0256**
Bulletin Boards	.0001**X	.0000**
Charts	.0000**	.0000**
Class Projects	.0088**	.0323*
Cooking Projects	.0500*	.0237*
Diagrams	.0040**	.0018**
Exhibits	.0000**	.0000**
Field Trips	.0000**	.0003**
Filmstrips w/Sound	.0474**	
Flannel Boards	.0010**	.0005**
Gardening Projects	.0024**X	---
Individual	.0000**	.0000**
Language Master	.0033**	.0015**
Magneticboards	.0033**	.0035**
Models	.0066**	---
Observing Demonstrations	.0000**	.0000**
Observing Dramatizations	.0000**	.0027**
Outdoor Education	.0001**	.0002**

Table 19, continued.

Media	Significance[a] Variables	Collasped Variables
Participant Demonstrations	.0004**	.0019**
Participant Dramatizations	.0000**	.0016**
Phono-Viewer	.0215*	.0114**
Photographs	.0002**	.0003**
Posters	.0000**	.0000**
Role Playing	.0235*	.0347*
Sociodrama	.0109**	.0119**
Sound Films	.0091**	.0036**
Specimens	.0021**	---
Transparencies	.0217**	---
Woodworking Projects	.0000**	.0000**
Workbooks	.0138**	.0128**

[a]X indicates expectancy less than 5.

* $p < .05$

** $p < .01$

Table 20

Summary Chi-Square Test

Reason for Non-Use

by Availability for

Media Not Used

Media	Significance[a]
Audio Flash Card	.0000**
Broadcast Television	.0053**
Cable Television	.0000**
Captioned Films (16 mm and 8 mm)	.0003**
Captioned Film Loops	.0003**
Cooking Projects	.0211* X
Exhibits	.0087**X
Feltboard	.0001**X
Filmstrips w/Sound	.0000**
Filmstrips w/o Sound	.0058**X
Individual Projects	.0001**X
Laboratory Experiments	.0057**
Language Master	.0000**X
Magneticboard	.0000**X
Maps	.0102**
Mock-Up	.0000**
Models	.0359*
Outdoor Education	.0342*
Phono-Viewer	.0000**
Radio	.0000**X

Table 20, continued.

Media	Significance[a]
Role-Playing	.0008**X
Simulations	.0135**
Silent Films	.0000**
Silent Film Loops	.0143**
Slides w/Sound	.0028**
Slides w/o Sound	.0014**
Sociodrama	.0001**
Sound Film Loops	.0014**
Sound Films	.0150**X
Speciemens	.0003**
Woodworking Projects	.0279*

[a]X indicates expectancy less than 5.

* $P < .05$

** $P < .01$